

ABSTRACT OF THE DISCLOSURE

A washing machine control method accurately determines an amount of laundry in the washing machine, while driving a motor coupled to a drum under load, based on a computed average of pulse width modulation values at the time of stopping the drive of a motor and the motor's rotational angle as the motor freewheels to a stop, in order to conserve water and reduce the time required for performing a washing step. The method includes steps accelerating a motor to a target rotational speed, by periodically applying to the motor a pulse width modulation (PWM) signal having a predetermined duty ratio; storing in a memory a set of PWM values corresponding to the signal applied in the accelerating step, by sensing a rotational speed of the motor; outputting a PWM signal having a duty ratio of zero, after the sensed motor speed reaches the target rotational speed, to allow the motor to freewheel to a stop; computing an average of the stored PWM values; measuring a rotational angle of the motor as the motor freewheels to a stop; calculating a laundry amount estimation value based on the average of the stored PWM values and the motor's rotational angle; and determining a laundry amount by comparing the calculated laundry amount estimation value to a set of laundry amount reference values stored in a lookup table. The laundry amount estimation value equals  $w_1 PWM_{ave} + w_2 \theta_{motor}$ , where  $PWM_{ave}$  is the computed average of the stored PWM values,  $\theta_{motor}$  is the measured rotational angle, and  $w_1$  and  $w_2$  are weight constants.